

## AN ANALYSIS OF PRICE BEHAVIOUR OF RICE

MUVVA PRIYANKA CHOWDARY<sup>1</sup> & S. HYMAJYOTHI<sup>2</sup>

<sup>1</sup>P. G. Student, Department of Agricultural Economics, Agricultural College, Bapatla, Andhra Pradesh, India

<sup>2</sup>Assistant Professor, Department of Agricultural Economics, Agricultural College, Rajamahendravaram,  
Andhra Pradesh, India

### ABSTRACT

*The price of agricultural commodities is inherently unstable, volatile, primarily due to the variation in their supply, lack of proper market integration and information. To counter this, MSP for major agricultural products is fixed by the Government, each year. Compound growth rates of MSP (Minimum Support price), wholesale price, farm harvest price and farmers expected prices to be almost similar but slightly high for MSP (6.88%) during the period 1997-98 to 2016-17. The analysis of the relationship between MSP, wholesale price and farm harvest price showed a positive relation. The farmers expected price of rice depends on previous year expected as well as actual prices significantly and positively at 1 per cent level of significance. The farmers expected prices were found to be higher than the previous year MSP. However, the increase in expectation has been narrowing down over time.*

**KEYWORDS:** MSP, FHP, Rice & Farmers Expected Price

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### INTRODUCTION

The price policy for agri-produce is to set remunerative prices with a view to encourage higher investment and production. Over years, it became an accepted fact that farmers respond to price incentives more sharply now, than in the past. Of the many changes that have taken place in the country's agriculture during recent past, the most important of all the changes is the demand-supply balance in respect of major crops, which urgently call for a fresh look at the role and relevance of system of minimum support prices. The farm harvest price is considered more suitable for the present purpose; these prices are the best indicator of the price received by farmers than wholesale prices. Limitation of farm harvest prices comes from the fact that farmers sell a portion of the surplus later in the lean period, differences in prices received by the farmers for that portion is not taken care of. Though there are some years in between when the wholesale prices have fallen below farm harvest prices, on an average the kind of pattern observed is support price < farm harvest price < wholesale price.

### Objectives

- To analyse the growth in the minimum support price, wholesale prices, farm harvest prices and farmer expected prices in rice.
- To compare and examine the relationship between minimum support price, wholesale prices, farm harvest prices and farmer expected prices in rice.

## MATERIALS AND METHODS

### Nature and Sources of Data

The present study was based on the secondary data. The data pertaining to prices were collected from the Directorate of Economics and Statistics (DES), Ministry of Agriculture, Government of India on a continuous basis and the Agricultural Market Committee, Eluru, West Godavari district.

### Period of Study

Secondary data: 1996-97 to 2016-17

Selection of area: West Godavari district of Andhra Pradesh

### Analytical Tools

#### Compound Growth Rates

To compare and analyse the growth of Minimum Support Price, Wholesale Price, Farm Harvest Prices and farmers expected prices compound annual growth rates (CAGR) were used.

$$\text{CAGR} = (\text{Ending value} / \text{Beginning value})^{1/(\text{period of years})} - 1$$

### Relationship of MSP, Wholesale Prices, Farm Harvest Prices and Farmers' Expected Prices

#### Relation between MSP, FHP and WP

To know whether there is a formal relationship between the prices, simple linear regression was fitted by taking MSP as independent variable and the wholesale prices as a dependent variable. Similarly, taking FHP as dependent variable and MSP as independent variable regression equation was fitted. Data with regard to MSP, WP, FHP of rice was obtained for 20 year period i. e., from 1997-98 to 2016-17 through various secondary published data. The following regression models were used.

$$\text{WP} = f(\text{MSP})$$

$$\text{FHP} = f(\text{MSP})$$

#### Relationship of Farmers' Expected Prices and Farm Harvest Price

To find out the relationship of farmers' expected and farm harvest prices Nerlovian Price Expectation Model of the following form is used.

$$(P_t^* - P_{t-1}^*) = B (P_{t-1} - P_{t-1}^*)$$

Where,

$P_t^*$  = Expected price of the crop in year t;

$P_{t-1}^*$  = Expected price of the crop in the preceding year (t-1)

$P_{t-1}$  = Actual price of the crop in the year t-1 i. e., FHP; and

$B$  = Coefficient of price expectation.

## Concepts and Terms Used

### Minimum Support Price (MSP)

Minimum Support price is the price at which government purchases crop produce from the farmers, to protect the farmers at times of bumper crops.

### Wholesale Price (WP)

Wholesale price is the price charged for a product sold in bulk to larger traders or distributor groups.

### Farm Harvest Price (FHP)

Farm harvest price is the average wholesale price at which the commodity is disposed by the producer at the village site during the specified harvesting period. Farm harvest price is those which prevail during six to eight weeks immediately after the harvesting period.

### Farmers Expected Price

Farmers expected price is the price that is derived from the farm harvest price. The current year farmer expected price is taken as the average per cent increment of past five year's farm harvest price and that is added to the previous year farm harvest price.

## RESULTS AND DISCUSSIONS

Four different prices, namely minimum support price, wholesale price, farm harvest price, and farmers expected price of rice were analysed to know the growth and relation among them. The data used is time series data from the period from 1997-98 to 2016-17. Table 1 presents the data over the 20 years.

**Table 1: Minimum Support Price, Wholesale Price, Farm Harvest Price and Farmers Expected Prices of Rice from the Year 1997-98 to 2016-17**  
(Rs. Q<sup>-1</sup>)

S. No	Year	MSP	WP	FHP	Farmers Expected Price
1	1997-98	415.00	470.12	421.00	443.19
2	1998-99	440.00	481.5	466.50	469.67
3	1999-00	490.00	560.00	532.50	518.20
4	2000-01	510.00	607.00	496.00	586.50
5	2001-02	530.00	633.00	522.82	546.29
6	2002-03	530.00	596.00	553.83	564.33
7	2003-04	550.00	613.78	559.90	602.00
8	2004-05	560.00	638.00	583.26	619.14
9	2005-06	570.00	645.56	584.12	601.77
10	2006-07	580.00	670.00	624.64	603.67
11	2007-08	645.00	703.00	774.14	647.48
12	2008-09	900.00	855.00	907.89	830.32
13	2009-10	1000.00	955.00	1009.26	1003.16
14	2010-11	1000.00	1029.00	905.12	1129.28
15	2011-12	1080.00	1112.50	1052.05	1012.76
16	2012-13	1250.00	1307.50	1238.13	1211.01
17	2013-14	1310.00	1313.30	1261.31	1451.82
18	2014-15	1360.00	1368.30	1363.96	1423.35
19	2015-16	1410.00	1420.00	1412.02	1483.80
20	2016-17	1470.00	1510.00	1424.31	1546.00

Source: Directorate of Economics and Statistics, [www.indiastat.com](http://www.indiastat.com), Agricultural

Market Committee, Eluru, FEP is calculated as mentioned in materials and methods.

### Compound Growth Rates of MSP, WP, FHP and Farmers Expected Prices of Rice

In the table 2 the compound growth rates of different prices were calculated for two sub-periods (*i. e.*, 1997-98 to 2006-07 and 2007-08 and 2016-17) and overall period *i. e.*, 1997-98 to 2016-17. During the overall period, compound growth rates of MSP, wholesale price, farm harvest price and farmers expected prices were almost similar but slightly high for MSP (6.88%). During the first sub-period among four prices, wholesale prices registered the highest growth rate of 4.48 per cent, followed by farm harvest prices with 4.01 percent. But during second sub-period, the compound growth rates of MSP are more than that of wholesale prices and farm harvest price but less than farmers expected prices. Similar results were observed in the study conducted by Desphande (2003) for the period 1970-71 to 1997-98. The results are also in line with Godara *et al.*, (2012) and they studied on compound growth rates of farm harvest price and gross income of major crops in Haryana during the period 1976-77 to 2005-06.

**Table 2: Compound Growth Rates of MSP, Wholesale Prices and Farm Harvest Prices and Farmers Expected Prices in Rice**

Period	MSP	Wholesale Prices	Farm Harvest Prices	Farmers Expected Price
1997-98 to 2006-07 (Sub-period I)	3.79	4.48	4.01	3.49
2007-08 to 2016-17 (Sub-period II)	9.58	7.00	8.86	10.15
1997-98 to 2016-17 (Overall period)	6.88	6.62	6.33	6.79

### Relationship of MSP, Wholesale Prices, Farm Harvest Prices and Farmers Expected Prices Relationship of MSP with WP and FHP

To know whether there is a formal relationship between the prices simple linear regression was fitted by taking MSP as independent variable and the wholesale prices as a dependent variable. The results obtained inferred that there is a positive relation between wholesale prices and MSP. Similarly, taking FHP as dependent variable and MSP as independent variable regression equation was fitted and it also indicated that there is a positive relation. It is observed from the table 3 that the regression coefficients were significant and the value of  $R^2$  is also high. Latika *et al.* (2012) also observed that FHP of wheat and gram were significantly affected with the MSP announced by the government.

**Table 3: Relation of MSP with FHP and WP**

Regression	Period	Regression Coefficients	Standard Error	$R^2$
WP = f (MSP)	1997-98 to 2016-17	0.93**	34.50	0.99
FHP = f(MSP)	1997-98 to 2016-17	0.94**	39.59	0.98

\*\*significant at 1 percent level of significance

### Relationship between Farmers' Expected Prices and Farm Harvest Prices

To study the relationship between the farmers' expected price and farm harvest prices the Nerlovian price expectation model of the following form was used

$$(P_t^* - P_{t-1}^*) = B (P_{t-1} - P_{t-1}^*)$$

Where,

$P_t^*$  = Expected price of the rice in year  $t$ ;

$P_{t-1}^*$  = Expected price of the rice in the preceding year ( $t-1$ )

$P_{t-1}$  = Actual price of the rice in the year  $t-1$  i. e., FHP; and

$B$  = Coefficient of price expectation.

The fitted Nerlovian Price Expectation model was

$$P_t^* = -27.177 + 1.13P_{t-1} - P_{t-1}^* + 1.14P_{t-1}^*$$

From the table 4 it is observed that expected prices of rice are very much based on prevailing prices of the last year. The coefficients of variables representing difference in actual and expected prices of rice in previous year and expected price of rice in previous year are significant at 1 per cent level of significance. It indicates that farmers expected price of rice depends on previous year expected as well as actual prices significantly and positively.

**Table 4: Regression Equation of the Factors Affecting Expected Prices**

Particulars	Regression Coefficients
Intercept	-27.177
$P_{t-1} - P_{t-1}^*$	1.13**
$P_{t-1}^*$	1.14**
$R^2$	0.99**

\*\*significant at 1 percent level of significance

The farmers expected prices were found to be higher than the previous year MSP. However, the increase in expectation has been narrowing down over time. These findings were similar with Deshpande (2003).

## CONCLUSIONS

- During the overall period (1997-98 to 2016-17), compound growth rates of MSP, wholesale price, farm harvest price and farmers expected prices to be almost similar but slightly high for MSP (6.88%).
- The farmers expected price of rice depends on previous year expected as well as actual prices significantly and positively.
- The farmers expected prices were found to be higher than the previous year MSP during 1997-98 to 2016-17, except for three years i. e. 2008-09, 2011-12 and 2012-13

## POLICY IMPLICATIONS

- Introduction of Direct Payment Deficiency System (DPDS) for paying MSP guarantee for the farmers has to be initiated. Under this system, the farmers will directly get the amount, which is the difference between the Minimum Support Price (MSP) and the market price, when the market price falls below the MSP.
- The government of India may adopt the recommendation given by the National Commission for Farmers (NCF) that MSP should be at least 50% more than the weighted average cost of production.

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